

Appl. No. 10/605,482
Amdt. dated November 06, 2007
Reply to Office action of June 20, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1 (currently amended): A multiple step-sized levels adaptive method for time scaling to
5 synthesize an $S_3[n]$ signal from an $S_1[n]$ signal and an $S_2[n]$ signal, the method comprising:

(a) calculating a ~~first magnitude temporary magnitude~~ of a cross-correlation function of the $S_1[n]$ signal and the $S_2[n]$ signal according to a ~~first index temporary index~~;

10 (b) comparing the ~~first magnitude temporary magnitude~~ with a threshold value;

(c) if the ~~first magnitude temporary magnitude~~ is smaller than the threshold value, calculating a first reference magnitude of the cross-correlation function of the $S_1[n]$ signal and the $S_2[n]$ signal according to a first reference index ~~behind lagging~~ the ~~first index temporary index~~ by a first determined number, or calculating a second reference magnitude of the cross-correlation function of the $S_1[n]$ signal and the $S_2[n]$ signal according to a second reference index ~~behind lagging~~ the ~~first index temporary index~~ by a second number; and

(d) synthesizing the $S_3[n]$ signal by weighting the $S_1[n]$ signal and adding the weighted $S_1[n]$ signal to an $S_4[n]$ signal that lags the $S_2[n]$ by a maximum index corresponding to a largest magnitude among all of the magnitudes calculated in step (c),

wherein the $S_1[n]$ signal has N_1 elements while the $S_2[n]$ signal has N_2 elements, and the $S_3[n]$ signal

= the $S_1[n]$ signal, where $0 \leq n <$ the maximum index;

25 = $(N_1-n)/(N_1 - \text{the maximum index}) * S_1[n] + (n - \text{the maximum index})/(N_1 - \text{the maximum index}) * S_4[n - \text{the maximum index}]$, where the maximum index $\leq n < N_1$;

= $S_4[n - \text{the maximum index}]$, where $N_1 \leq n \leq N_2 - \text{the maximum index}$.

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2-3 (cancelled).

4 (currently amended): The method of claim 1 wherein step (c) further comprises:

5 (e) setting each of the magnitudes corresponding to indexes between the first index temporary index and the first reference index to zero or setting each of the magnitudes corresponding to indexes between the temporary index and the second reference index to zero.

5 (original): The method of claim 1 further comprising:

10 (f) updating the threshold value according to the maximum index.

6 (original): The method of claim 1 wherein the $S_1[n]$ signal and the $S_2[n]$ signal are sampled from an $S_1(t)$ signal and an $S_2(t)$ signal respectively.

15 7 (original): The method of claim 6 wherein the $S_1(t)$ signal and the $S_2(t)$ signal are both derived from an original signal.

8 (original): The method of claim 7 wherein the original signal is an audio signal.

20 9 (original): The method of claim 7 wherein the original signal is a video signal.

10 (original): The method of claim 7 wherein the $S_1(t)$ signal and the $S_2(t)$ signal are identical.

25 11 (original): The method of claim 7 wherein the $S_1(t)$ signal and the $S_2(t)$ signal are different from each other.

12 (original): The method of claim 1 wherein the second number is equal to one.

30 13 (original): The method of claim 1 wherein the first determined number is larger than

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one.

14 (currently amended): A multiple step-sized levels adaptive method for time scaling to
synthesize an $S_3[n]$ signal from an $S_1[n]$ signal and an $S_2[n]$ signal, the method
5 comprising:

- (a) delaying the $S_1[n]$ signal by a predetermined number to form an $S_5[n]$ signal;
- (b) calculating a ~~first magnitude~~ temporary magnitude of a cross-correlation function
of the $S_1[n]$ signal and $S_5[n]$ signal according to a ~~first index~~ temporary index;
- (c) comparing the ~~first magnitude~~ temporary magnitude with a threshold value;
- 10 (d) if the ~~first magnitude~~ temporary magnitude is smaller than the threshold value,
calculating a first reference magnitude of the cross-correlation function of the
 $S_1[n]$ signal and the $S_2[n]$ signal according to a first reference index ~~behind~~
lagging the ~~first index~~ temporary index by a first determined number, or
calculating a second reference magnitude of the cross-correlation function of
15 the $S_1[n]$ signal and the $S_2[n]$ signal according to a second reference index
~~behind~~ lagging the ~~first index~~ temporary index by a second number; and
- (e) synthesizing the $S_3[n]$ signal by weighting the $S_1[n]$ signal and adding the
weighted $S_1[n]$ signal to an $S_4[n]$ signal that lags the $S_5[n]$ signal by the
predetermined number plus a maximum index corresponding to a largest
20 magnitude among all of the magnitudes calculated in step (d),

wherein the $S_1[n]$ signal has N_1 elements while the $S_2[n]$ signal has N_2 elements, and
the $S_3[n]$ signal equals:

- = the $S_1[n]$ signal, where $0 \leq n < (\text{the predetermined number} + \text{the maximum index})$;
- 25 = $(N_1-n)/(N_1-(\text{the predetermined number} + \text{the maximum index})) * S_1[n] + (n-(\text{the predetermined number} + \text{the maximum index}))/ (N_1-(\text{the predetermined number} + \text{the maximum index})) * S_4[n-(\text{the predetermined number} + \text{the maximum index})]$, where $(\text{the predetermined number} + \text{the maximum index}) \leq n < N_1$;
- = $S_4[n-(\text{the predetermined number} + \text{the maximum index})]$, where $N_1 \leq n \leq (N_2 +$
30 the predetermined number + the maximum index).

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15-16 (cancelled).

17 (currently amended): The method of claim 14 wherein step (d) further comprises:

5 (f) setting each of the magnitudes corresponding to indexes between the ~~first index temporary index~~ and the first ~~reference index to zero~~ or ~~setting each of the magnitudes corresponding to indexes between the temporary index and the~~ second reference index to zero.

10 18 (original): The method of claim 14 further comprising:

(g) updating the threshold value according to the maximum index.

19 (original): The method of claim 14 wherein the second number is equal to one.

15 20 (original): The method of claim 14 wherein the first determined number is larger than one.